



## *IFE Science & Technology Community Strategic Planning Workshop*

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Scaling breakthrough scientific startups that impact billions of lives

Thesis

Only **breakthrough science** can solve our greatest challenges.

These **must-have solutions** create enormous value.

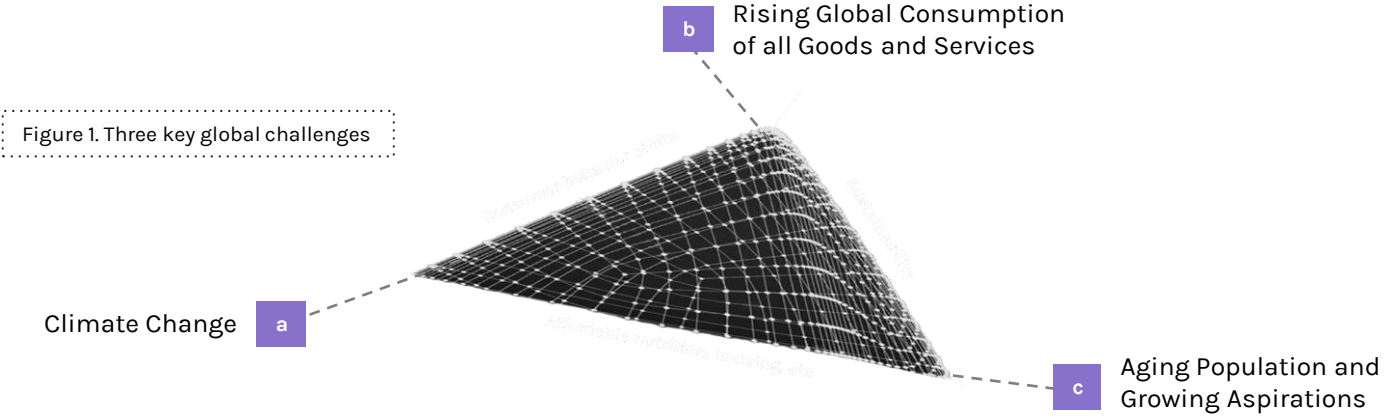
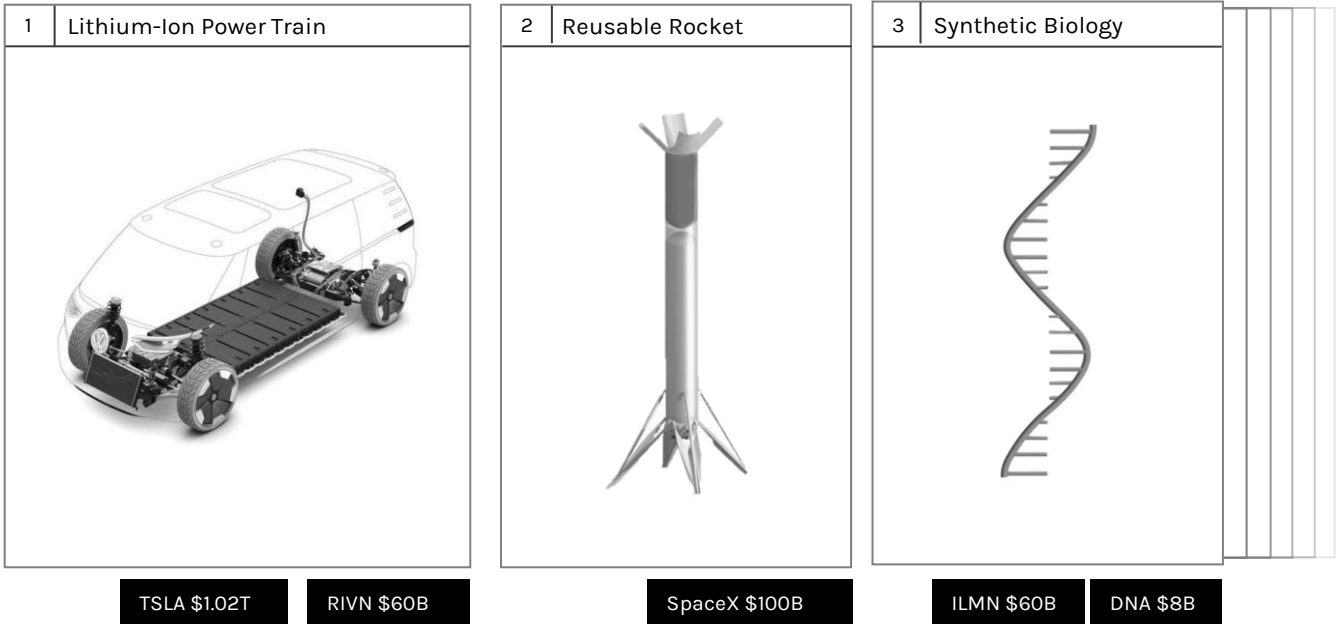


Figure 2. Example Breakthrough Scientific Innovations



Who We Work With


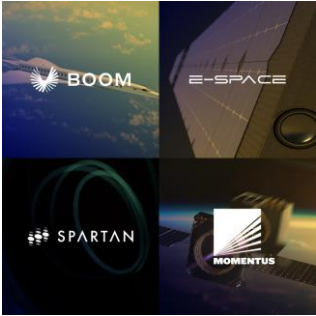




Founders of breakthrough science startups that have the potential to impact billions of lives

>\$1B

Assets Under Management (AUM)

6 Focus Sectors

Solving Global Challenges

Energy	Transportation	Infrastructure	Manufacturing	Agriculture	Human Augmentation
Zero-Carbon On-demand Power	Decarbonized Ground, Sea and Air Transport	Climate-resilient Infrastructure	Supply Chain Resilience	Sustainable Food Production	Next-gen Mental Health Treatment
Increased Energy Efficiency	Safer and Faster Travel	Universal Internet Accessibility	Green Manufacturing	Affordable Nutrition	Personalized & Regenerative Medicine
Renewable Energy Storage	Space Frontier Access and Logistics	Grid Flexibility & Resilience	Attainable Housing Solutions	Scalable Alternative Protein	Extended Healthspan
					

Who We Work With

Table 3. Select Portfolio companies by sector and addressable challenge

## Managing Risk

We work with companies that have retired as much **science risk** as possible and have a clear **engineering plan**.

RISK SPECTRUM



Science Risk —● *Will it work?*

Engineering Risk —● *When will it work?*  
*Will it be cost effective?*

Commercial Risk —● *How does it compete in the market?*  
*Can the organization scale?*

# The Fusion Industry ~20 Years Ago

- 1-2 private fusion companies
- Private funding from eccentric billionaires
- Few operating experimental facilities; several in planning stages



# The Fusion Industry Today:

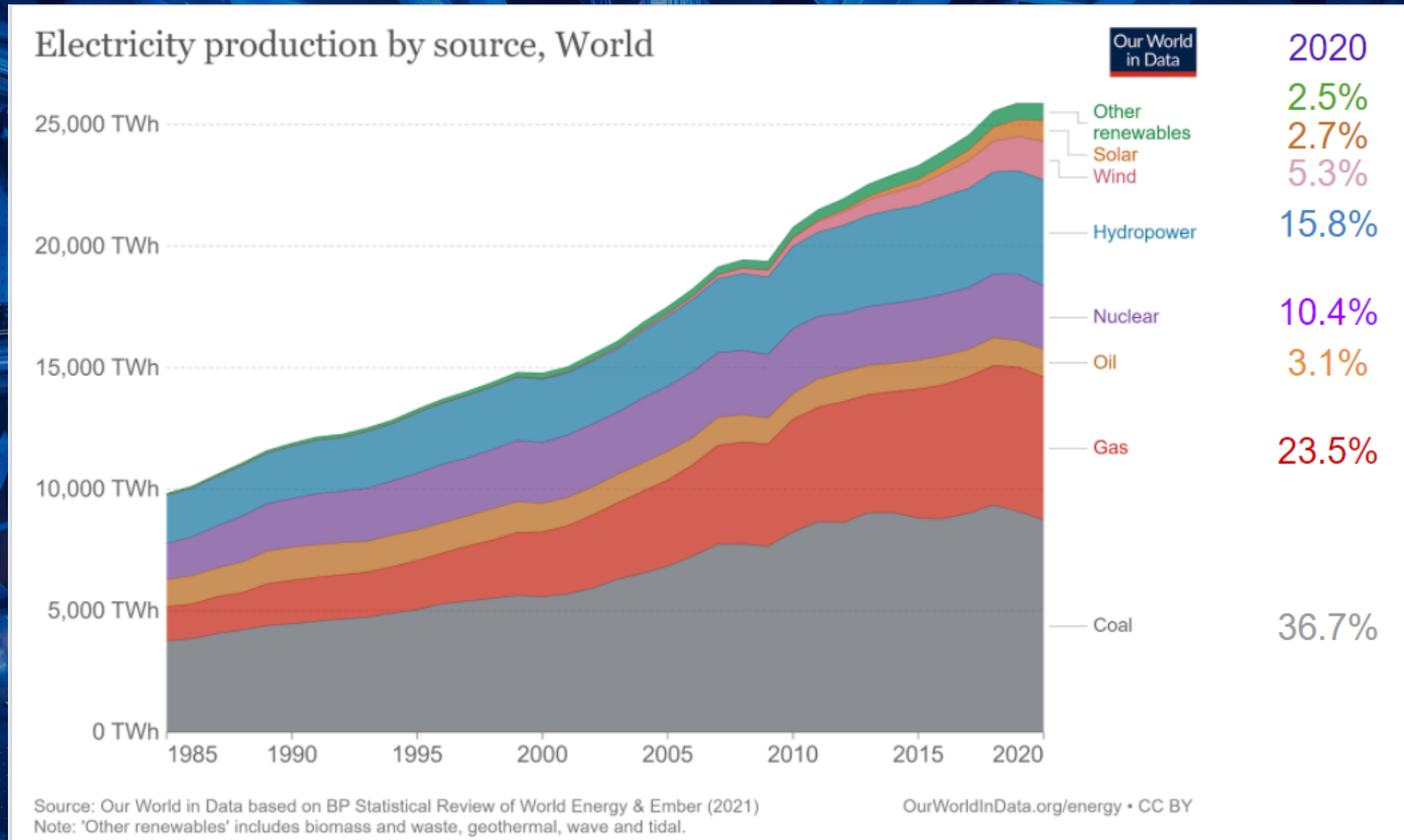
- 35 fusion companies
- 4 companies with over \$300 million in private funding: Commonwealth Fusion Systems, TAE Technologies, Helion Energy, General Fusion
- Backed by 30+ VC and institutional financial firms
- Plus energy companies and electric utilities: Equinor, Chevron, ENI



Why is the private sector investing in fusion?



# Electricity Demand Is Massive and Growing



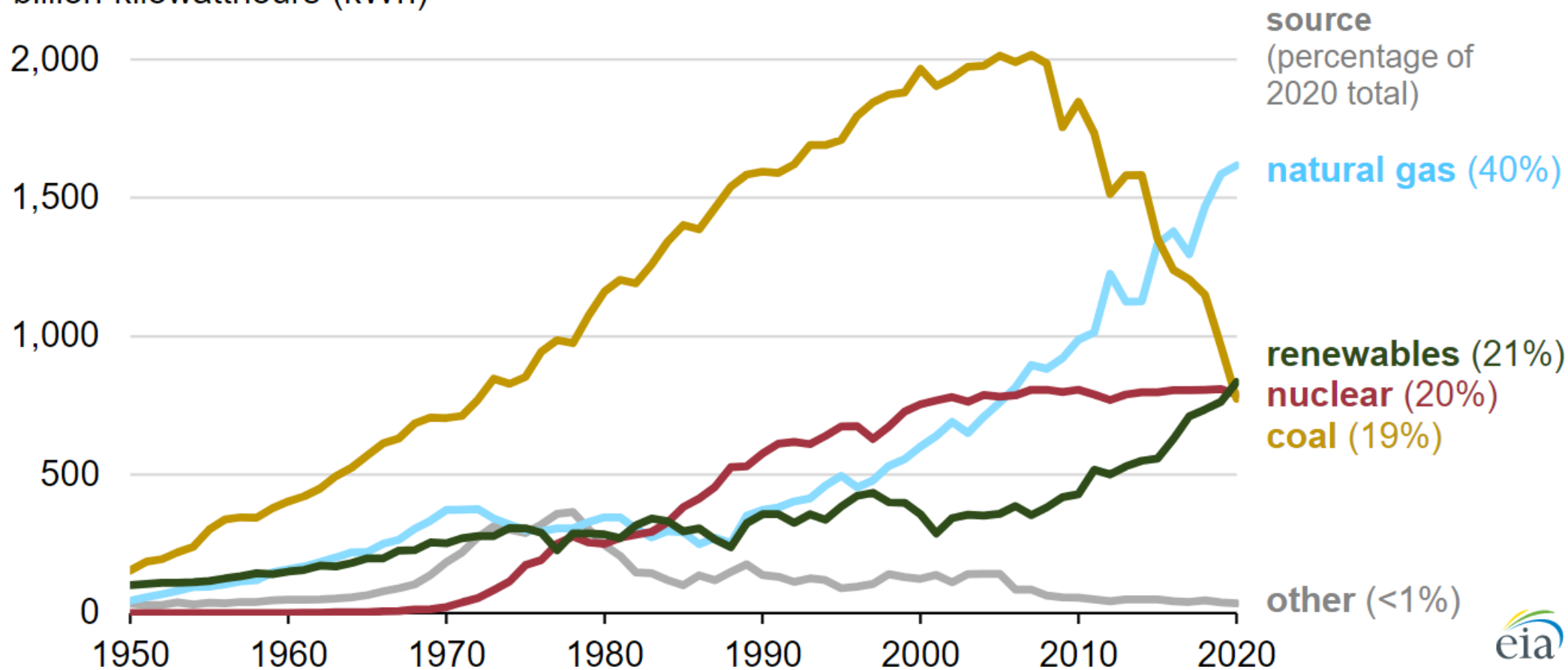
# And We Will Probably Use More Energy

- Global access to electricity
- Increasing air conditioning loads
- Electrifying passenger vehicles
- High temperature heat for industrial users (steel, cement, hydrogen)
- Carbon dioxide removal technologies
- Providing clean water (treatment, desalination)
- Cryptocurrency mining
- All the Starship launches
- Power to \_\_\_\_ (fuels, plastics, food?)
- Air taxis
- Space elevators
- Boiling the ocean

# The Energy Transition Has Started In Some Markets

## Annual U.S. electricity generation from all sectors (1950–2020)

billion kilowatthours (kWh)



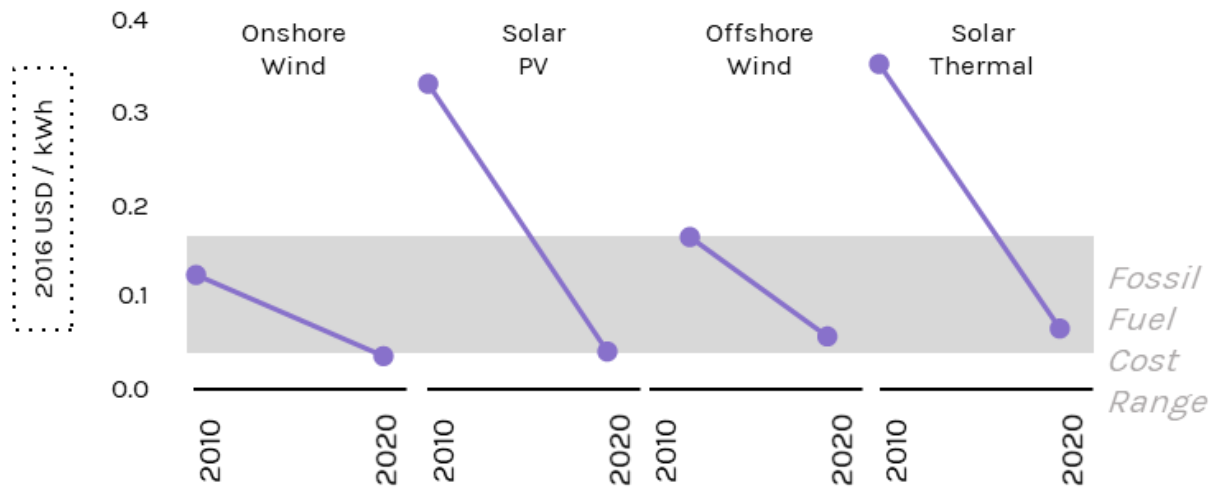
Source: U.S. Energy Information Administration (EIA), [Monthly Energy Review](#)

Note: This graph shows electricity net generation in all sectors (electric power, industrial, commercial, and residential) and includes both utility-scale and small-scale (customer-sited, less than 1 megawatt) solar.

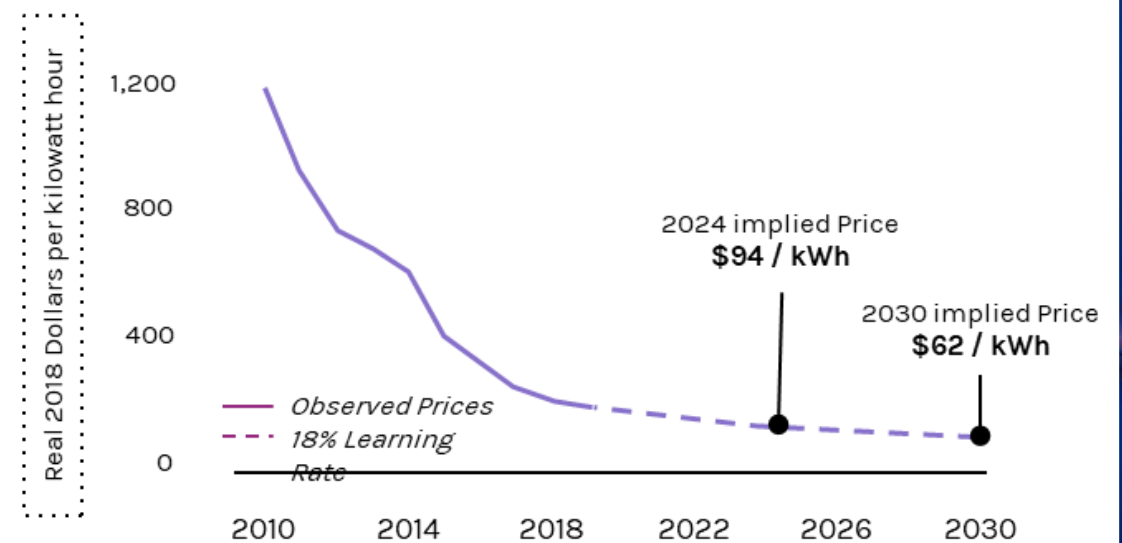


# The Pace of Technical Progress Is Increasing

## Massive cost decline for renewables

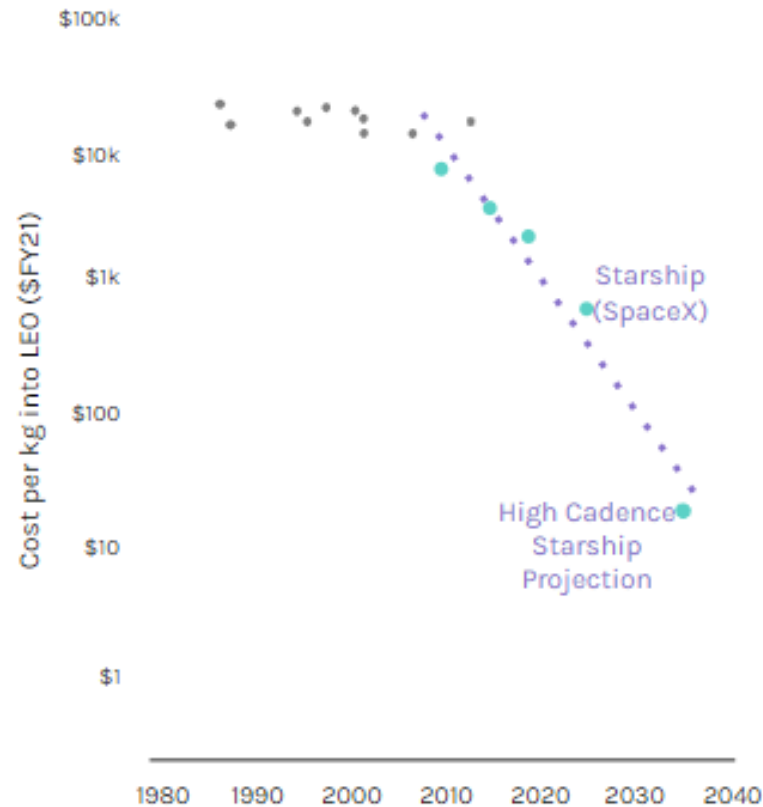


## Battery costs have fallen like solar



# The Pace of Technical Progress Is Increasing

Exponential decrease in launch costs  
enables a new space economy



# The Pace of Technical Progress Is Increasing

- **Advances in adjacent and enabling technologies:** computational power, additive manufacturing, advanced materials, HTS magnets, lasers (high power, high rep rate, shaped pulse)
- Recent JET, NIF, EAST results



# What Is The Private Sector Looking For?



# Addressing ALL Areas of Startup Risk is Critical:

As new companies mature, the private sector expects all three areas - **science**, **engineering**, and **commercial** to be derisked.

RISK SPECTRUM



Science Risk —● *Will it work?*

Engineering Risk —● *When will it work?*  
*Will it be cost effective?*

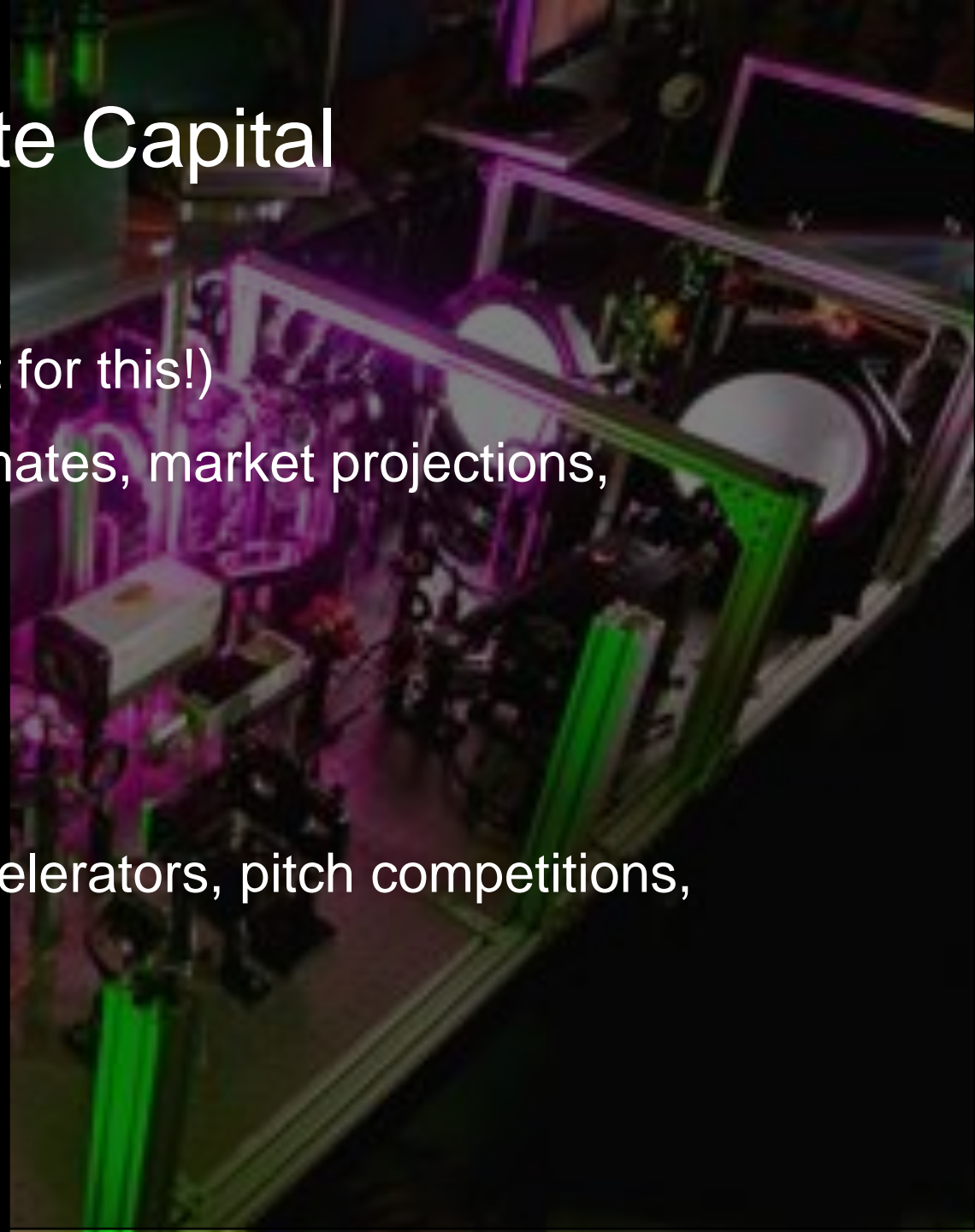
Commercial Risk —● *Can the company attract financing and partnerships?*  
*Can the team build a business?*  
*Go to market / near term opportunities?*

# Suggestions For Raising Private Capital

- It's a conversation, not a pitch
- Learn how to tell a story (or bring on talent for this!)
- Support the story with numbers (cost estimates, market projections, techno-economics)
- Go talk to people

**THERE ARE RESOURCES!**

(grant programs, boot camps, incubators, accelerators, pitch competitions, advisors)



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Private funding is not fixed.



# Thank you!

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